



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southwest Fisheries Science Center
8901 La Jolla Shores Drive
La Jolla, CA 92037-1508

Project Instructions

Date Submitted: July 6, 2015

Platform: NOAA Ship *Reuben Lasker*

Project Number: RL 15-04
SWFSC MMTD Cruise No. 1648

Project Title: Southern Feeding Ground Survey for Eastern North Pacific Gray Whales

Project Dates: July 9, 2015 to November 9, 2015

Prepared by: David W. Weller Dated: 6 July 2015
David W. Weller
Chief Scientist, Southern Feeding Ground Survey for Eastern North Pacific Gray Whales
Cetacean Health and Life History Program
Marine Mammal and Turtle Division, SWFSC

Approved by: Lisa Ballance Dated: 6 July 2015
Lisa Ballance
Division Director
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Affiliation (Program or Lab)

Approved by: Francisco Werner Dated: 6 July 2015
Francisco Werner
Director
Southwest Fisheries Science Center

Approved by: _____ Dated: _____
Captain Douglas D. Baird Jr., NOAA
Commanding Officer
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I. Overview

A. Brief Summary and Project Period

B. Days at Sea (DAS)

Of the 109 DAS scheduled for this project, all are Program and Agency funded.

C. Operating Area (include optional map/figure showing op area)

The principal study area includes the U.S. and Canadian West Coasts – Alaska, Washington, Oregon, and California coastal waters between 0.5-10 nmi offshore. The survey is planned to be a mark-recapture of gray whales, via photo-identification and biopsy, and will cover inshore areas as close to shore as possible.

D. Summary of Objectives

The eastern North Pacific (ENP) population of gray whales (*Eschrichtius robustus*) is a large whale recovery success story. The species was removed from the Endangered Species List in 1994 when the population was estimated to number on the order of 20,000 individuals, a number roughly corresponding to its estimated pre-exploitation abundance.

During summer and fall a small portion of the eastern gray whale population remains south of the customary Arctic feeding grounds. These whales summer along the Pacific coast between Kodiak Island, Alaska and northern California. The number of these whales is relatively small and they utilize a largely different ecosystem from that of the main ENP population suggesting that it is a distinct feeding aggregation. While these “southern whales” have been the topic of scientific research for several decades, data have been collected in relative small regional study sites located between 41° N and 52° N. This survey will conduct the first range-wide assessment of gray whales that summer south of the Aleutian Islands.

The primary objectives of this survey are: (1) Mark-recapture estimate (from photo-id) of abundance over the entire southern summer feeding area(s); (2) Examine population structure, including maturity (from hormones) and sex (from genetics) composition and assessment of internal and external recruitment. The survey is scheduled from mid-July through early November 2015.

The objectives of the research cruise will divert to a study of North Pacific right whales in the Gulf of Alaska during Leg 2 as follows:

- To assess the distribution of right whales within a predefined area of right whale habitat (figure x);
- To locate whales for tagging, photo-identification, behavioral observations, and habitat studies using ship-based passive acoustic methodology;

- To photo-identify and biopsy sample individual right whales during tagging operations for analysis of abundance, population structure, genetics, pollutants and diet.

E. Participating Institutions

Marine Mammal and Turtle Division, Southwest Fisheries Science Center, (NMFS, NOAA Fisheries).

F. Personnel/Science Party: name, title, gender, affiliation, and nationality

Name (Last, First)	Title	Date Aboard	Date Disembark	Gender	Affiliation	Nationality
Weller, Dave	Chief Scientist	7/8/2015	8/2/2015	M	SWFSC	USA
Cené Bryant	Scientist	7/8/2015	8/2/2015	F	Humboldt State University	USA
Paul Fiedler	Oceanographer	7/8/2015	8/2/2015	M	SWFSC	USA
Heather Colley	Scientist	7/8/2015	8/2/2015	F	SWFSC	USA
Lang, Aimée	Scientist	7/8/2015	8/2/2015	F	OAI	USA
Sergio Martinez	Scientist	7/8/2015	8/28/2015	M	UABCS	México
Jan Straley	Scientist	Small boat transfer: Leg 1		F	University of Alaska, Southeast	USA
Robert Pitman	Scientist	8/4/2015	8/28/2015	M	SWFSC	USA
Bernardo Alps	Scientist	8/4/2015	8/28/2015	M	SWFSC	Resident Alien
Brenda Rone	Cruise Leader	8/4/2015	8/28/2015	F	AFSC	USA
Anthony Martinez	Scientist	8/4/2015	8/28/2015	M	SEFSC	USA
Aimée Lang	Cruise Leader	8/27/2015	9/24/2015	F	OAI	USA
Suzanne Yin	Scientist	7/8/2015	8/2/2015	F	SWFSC	USA
LIST IS NOT COMPLETE						

G. Administrative

1. Points of Contacts:

Primary Point of Contact (POC)

Annette Henry, Survey Coordinator, SWFSC
8901 La Jolla Shores Drive

La Jolla, CA 92037
(858) 546-5672
Cell: (760) 920-1546
SurveyCoordinator.SWFSC@noaa.gov

Alternative land based POC

Jeremy Rusin
8901 La Jolla Shores Drive
La Jolla, CA 92037
(858) 546-7101
Jeremy.Rusin@noaa.gov

Ship POC – RL Operations Officer

LTJG Amber Payne
NOAA Ship *Reuben Lasker*
(541) 272-9094
Ops.Reuben.Lasker@noaa.gov

2. Diplomatic Clearances

Canadian clearance pending.

3. Licenses and Permits

This project will be conducted under the National Marine Fisheries Service Permit No. 14097 issued to Southwest Fisheries Science Center, for research activities on marine mammals and sea turtles and Permit No. 1425 issued to Alaska Fisheries Science Center for tagging marine mammals; National Marine Sanctuary Permit Multi-2013-009 issued to Southwest Fisheries Science Center to conduct activities within West Coast National Marine Sanctuaries (sanctuaries) for research purposes; permits to salvage and import marine mammal parts and birds will be present on the vessel. Permit #14245, issued by the NMFS to the National Marine Mammal Laboratory will be used for large whale (other than gray whale) tagging, photography and biopsy on Leg 2.

II. Operations

The Chief Scientist is responsible for ensuring the scientific staff are trained in planned operations and are knowledgeable of project objectives and priorities. The Commanding Officer is responsible for ensuring all operations conform to the ship's accepted practices and procedures.

A. Project Itinerary:

Leg 1: 9 July - 1 August, 25 DAS, San Diego, CA to Kodiak, AK

Leg 2: 6 August – 27 August, 22 DAS, Kodiak, AK to Kodiak, AK

Leg 3: 1 September – 23 September, 23 DAS, Kodiak, AK to Ketchikan, AK

Leg 4: 28 September – 22 October, 25 DAS, Ketchikan, AK to Port Angeles, WA

Leg 5: 26 October – 9 November, 15 DAS, Port Angeles, WA to San Diego, CA

Note: A small boat pick-up and drop-off will be necessary on Leg 1 to bring Jan Straley aboard the ship. Dr. Straley has first hand knowledge of where gray whales are located in the waters of Alaska. The pickup will occur near Sitka Sound or Salisbury Sound (north of Sitka Sound) and drop-off at Pelican (a bit north of the last gray whale location).

B. Staging and Destaging:

29 June – 2 July: Staging will occur in San Diego, CA prior to ship's departure

9-10 November: Destaging (offloading) will occur in San Diego, CA

C. Operations to be Conducted:

Gray Whale Operations

Typically, gray whales will be found close to shore (between .5 and 10 nmi). Small boat operations are necessary for mark-capture (photography), biopsy, and collecting fecal samples. Known information about gray whale locations (real-time data combined with previous sighting information) will be used to determine best locations for gray whale operations to take place.

Visual Operations: A team of two observers will stand watch throughout the day for gray whales and other cetaceans when the small boat is not deployed. When the small boat is deployed, a minimum of two observers will remain aboard NOAA Ship *Reuben Lasker* to observe the small boat in relation to where animals are located. The observers will use big eye (25x) and handheld binoculars (7x) to direct the small boat and large vessel to the animals. Observers will rotate every two hours.

Small Boat Operations: For gray whale operations, *Lasker's* RHIB (Hurricane) should be launched at the beginning of each day's operations. Gray whale work (biopsy and photography) requires the small boat to approach animals. The small boat will remain within radio contact at all times while deployed; distance to the ship will be determined by the Cruise Leader and Commanding Officer. A full day, sunrise to sunset, of small boat work is anticipated per day. With the exception of the small boat, safety apparel and an E-PIRB, all necessary gear will be furnished by the scientific party including an emergency communications kit (satellite phone and handheld GPS unit) which will be kept aboard the small boat when deployed. See Appendix X for the "Statement of Intent and Risk Assessment for Small Boat Use."

Biopsy Sampling: Samples for genetic analyses of gray whales will be collected during small boat operations. The animals to be sampled will be approached by small boat.

Photography: Photographs of gray whales are necessary for mark-recapture abundance analysis. They will also be used as part of a gray whale catalogue. The animals to be sampled will be approached by small boat.

Fecal Collection: Fecal samples contain genetic information and will need to be collected as often as possible from gray whales. Collection of fecal samples will be made during small boat operations and a small net will be used. Fecal samples will be bagged and then stored in scientific freezer aboard ship.

Gray Whale and Pacific Right Whale and Large Whale Survey - Leg 2

Leg 2 of the survey will focus on large whales (including but not limited to North Pacific right whale, blue whales and fin whales). The first 3-4 days of leg 2, however, will be dedicated to photo-id and biopsy of gray whales.

Whales will be located either with naked eye or binoculars from the research vessel. Observers will assist the ship in keeping track of the location of the animal(s), while a NOAA Ship *Lasker's* RHIB is deployed for tagging. Whales will be approached within 3-10 m distance for tag deployment from the bow of the RHIB. The satellite tags intended for use in this study are the Wildlife Computers (Redmond, WA, USA) MK 10a transmitters custom-designed in an implantable cylinder housing.

Additionally, photographs, video, and biopsy samples will be attempted from every individual encountered. These data will primarily be used to individually identify and to determine the sex of the whales but will also be archived for future studies of population size estimation, population structure, feeding ground fidelity, and other ecological research. Tag deployment, photo-identification, and biopsy sampling will be performed according to regulations and restrictions specified in the existing permits.

During tagging operations, all individuals on the tagging RHIB will be required to wear helmets and will be outfitted with a safety kit including a knife, strobe, whistle and mirror. These will be supplied by NMML. During all RHIB operations, NOAA Ship *Lasker* will maintain a distance with the RHIB as determined by the Chief Scientist and Commanding Officer prior to launch. NOAA Ship *Lasker* will not conduct any other operations during tagging, including any engine maintenance or emergency drills. RHIB cox'n will be 1) NOAA small boat certified driver, or 2) ship's force. The Chief Boatswain will qualify scientific boat drivers prior to operations.

Visual Surveys

Cetacean Visual Watch: When not working on gray whales, a watch for cetaceans will be maintained on the flying bridge during daylight hours (approximately 0600 to 1900) by 1 to 4 mammal observers. Observers will work in 2-hour rotations. On sighting a marine mammal school or other feature of biological interest, the Cruise Leader or marine

mammal observer team on watch may request that the vessel be maneuvered to approach the school or feature for investigation. When the ship approaches a school of dolphins, the observers will make independent estimates of school size. Biopsy and photography operations may commence from the bow, based on directions from the Cruise Leader or Senior Marine Mammal Observers. In some instances, the Cruise Leader will request the deployment of a small boat for biopsy, photography, or other operations.

Biopsy Sampling: Samples for genetic analyses of cetaceans other than gray whales will be collected on an opportunistic basis. The animals to be sampled will be approached by *Reuben Lasker* during normal survey operations, will approach the vessel on their own, or will be approached by a small boat. Samples will be collected, from animals within 80 m of the bow of the vessel, using a dart fired from a crossbow. Small boat deployment will be requested by the Cruise Leader on an opportunistic basis during all daylight hours, possibly multiple times in a single day, providing the Commanding Officer concurs that operating conditions are safe. The small boat will remain within sight and radio contact at all times while conducting scientific missions.

Photography: Photographs of marine mammals other than gray whales will be taken on an opportunistic basis. These will be used to study social behavior and movement patterns of identified individuals, and to study geographic variation. The animals to be sampled will be approached by the research vessel during normal survey operations, will approach the vessel on their own, or will be approached by a small boat. Small boat deployment will be requested by the Cruise Leader on an opportunistic basis during all daylight hours, possibly multiple times in a single day, providing the Commanding Officer concurs that operating conditions are safe. Unless the Commanding Officer allows otherwise, the small boat will remain within sight and radio contact at all times while deployed.

BOEM Surveys

Two Bureau of Ocean Energy Management (BOEM) study areas (Figure x), are being considered for alternative energy development (wind and wave power). The areas are small (less than 50 sq nmi each) and are located off the coast of Oregon. Areas will likely be surveyed towards the end of Leg 4. If the survey is hampered by weather, it may be repeated on Leg 5. The survey will require small boat operations to collect additional scientists (two seabird observers). Location and time of pickup will be determined if Memorandum of Understanding between BOEM and SWFSC is reached.

Visual Surveys: Line-transect survey methods will be used to collect cetacean abundance data in two BOEM study areas. A daily watch for cetaceans will be maintained on the flying bridge during daylight hours (approximately 0600 to 1900) by six (6) mammal observers. Each observer will work in 2-hour rotations, manning each of the following three stations on the flying bridge for 40 minutes: a port side 25x150 binocular station, a center-line data recorder position, and a starboard 25x150 binocular station.

Visual surveys of seabirds will be conducted from the flying bridge at part of the BOEM survey. Seabird observers will use handheld and 25x150 binoculars.

Ship Speed, Order of Operations: At the beginning of each BOEM survey area, effort should start on the trackline. The ship should travel at 10 kt (through the water) along the designated trackline. While on search effort, if the ship's speed through the water should deviate from this by more than 1 kt, the bridge personnel will notify the mammal team on watch or the Cruise Leader.

On sighting a marine mammal school or other feature of biological interest, the Cruise Leader or marine mammal observer team on watch may request that the vessel be maneuvered to approach the school or feature for investigation. When the ship approaches a school of dolphins, the observers will make independent estimates of school size. Biopsy and photography operations may commence from the bow, based on directions from the Cruise Leader or Senior Marine Mammal Observers. When the observers have completed scientific operations for the sighting, the ship will resume the same course and speed as prior to the sighting.

Salvage of Marine Mammals and Birds

Marine mammal body parts and/or birds may be salvaged on an opportunistic basis at the discretion of the Cruise Leader. This includes whale and dolphin ivory and carcasses, and whole bird specimens. In the event that this occurs, scientific freezer space will be used to store the salvaged material. All marine mammal specimens obtained will be archived at the SWFSC but may be released on extended loan to recognized research institutions according to existing guidelines. All bird specimens will be donated to the San Diego Natural History Museum.

Passive Acoustics

Sonobuoys: Sonobuoys will be deployed from either the ship or small boat on an opportunistic basis at the discretion of the Cruise Leader during Leg 2 of the survey. Acoustics personnel will contact the bridge to ask permission to deploy the sonobuoy before deployment. Sonobuoys are deployed by hand and we expect multiple deployments of sonobuoys on a daily basis to locate and track right whales. Sonobuoys are free-floating instruments used to detect and record large whale vocalizations.

Oceanography

A chronological record of oceanographic stations will be kept by the ship with dates and times in GMT in their Scientific Computing System (SCS). The ship will provide a copy of the SCS data to the SWFSC Chief Scientist at the completion of the research cruise. The collection of oceanographic data and its processing will be conducted by the ship's Survey Technician, the Deck Department, and scientific personnel as required.

Thermosalinograph Sampling: The ship will provide and maintain a thermosalinograph (TSG), which is calibrated and in working order, for continuous measurement of surface

water temperature and salinity. The ship's TSG will continuously collect surface water temperature and salinity from the ship's clean seawater system. A debubbler needs to be installed at the water intake to ensure that flow to the TSG is maintained in all weather conditions. Without a debubbler, it is likely that the pump will have to be turned off in rough weather. Consequently, we would not obtain continuous TSG measurements. The TSG needs to be cleaned between each leg of research cruise to prevent inaccurate salinity measurements. SCS will serve as the main data collection system. SWFSC will provide the ship's Operations Officer and Survey Technicians with a detailed SCS data acquisition request before departure. All SCS data will be provided to the SWFSC Cruise Leader following each survey leg. Ship personnel will be responsible for cleaning the TSG between each leg of the survey. A copy of the pre- and post-research cruise TSG calibrations will be provided to SWFSC.

CTD Sampling: Weather permitting, CTD stations will be occupied each night the ship is in water deeper than 1000m: a pre-dawn cast (if the ship moved more than 10 nm after the end of effort the previous day) and an evening cast after the end of effort. Seawater will be sampled using a SeaBird 9/11+ CTD. Dual Sea-Bird Electronics temperature, conductivity, and oxygen sensors and a single pressure sensor will be used to collect data from each cast. The ship's survey technician will be responsible for the CTD operations and maintenance. All casts are to 1000 m, where bottom depths permit. When bottom depths are too shallow for the 1000 m cast, CTD operations will not occur. Casts descent rate will be at 30m/min for the upper 100 m of the cast, and 60 m/min below 100 m. An evening CTD cast will be conducted no sooner than one hour after sunset. The exact time will be determined by the Deck Officer (by 1800 local ship time that day). A morning cast will begin approximately one and one-half hours before sunrise if the ship moved more than 10 nm after the end of effort the previous day. The exact starting time will be determined the evening before, by the Operations Officer or Deck Officer. Cast times are subject to change since sunrise and sunset will vary during the survey and the schedule may be modified by the scientific personnel. Additional CTD stations may be requested by the Cruise Leader in areas of special interest. The ship's Survey Technicians will conduct the CTD sample collections. The crew of the vessel will operate winch and other deck equipment.

All instruments, their spares, and spare parts provided by the ship must be maintained in working order and, if applicable, have current calibrations (range is outside of 12 months, but instruments have not been used; current calibrations approved by SWFSC Oceanographer Fiedler). A copy of the pre- and post-survey calibrations for all sensors will be provided to SWFSC. A deck pressure test is required at the beginning of each leg (five times throughout survey). The test takes approximately 30 minutes to complete and should be conducted by the ship's Survey Technician. All data files, including the deck pressure test, should be given to the Cruise Leader at the end of each leg.

Active Acoustics: The objectives of the active acoustics are to:

§ Whenever possible sample multi-frequency acoustic backscatter data using the ship's Simrad EK60 scientific echosounder system.

§ Whenever possible sample sea-surface temperature, salinity, and chlorophyll-a using the ship's thermosalinograph and fluorometer.

§ Whenever possible sample air temperature, barometric pressure, and wind speed and direction using the ship's integrated weather station.

§ Whenever possible sample multi-frequency acoustic backscatter data using the ship's Simrad ME70 multibeam echosounder system, synchronized and configured to not interfere with the EK60.

EK60 and ME70 acoustic data will be collected whenever possible while underway and on-stations, including when at anchor. Acoustic backscatter data will be collected with EK60 operating at 18, 38, 70, 120, and 200 kHz. The .raw files will be telemetered continuously, as collected, to the SWFSC via a Matlab script, secure ftp, and the ship's VSAT. The protocol for data transfers meets NOAA IT security requirements.

The ship's echosounders and Doppler velocity log (DVL) should be secured when possible as they interfere with the signals received on the EK60. When their use is necessary, the OOD will inform the Chief Scientist of any use of the vessel's sounders or DVL.

The split-beam transducers are mounted on the ship's retractable centerboard. During the survey, the centerboard will be extended to intermediate depth whenever possible, which extends the transducers to ~7.2 m below the surface, to reduce the unsampled region near the sea surface. Any changes to the centerboard depth will be reported to the Cruise Leader and recorded in the SCS.

The total kilometers of trackline when EK60 and ME70 were used will be calculated and reported as incidental take.

XBT Drops: There will be a minimum of four XBT drops per BOEM study area. These drops will likely be conducted at the corners of the study areas or as requested by the Cruise Leader. XBTs may also be dropped more frequently in these areas to sample fine scale thermal structure. The scientific party while underway will conduct XBT deployments; a handwritten log will be completed for each drop (e.g., date, time, latitude, longitude, comments on the drop, etc.). The completed log needs to be given to the Chief Scientist at the end of the survey.

Collection of Fish

Fish will be collected on an opportunistic basis at the discretion of the Cruise Leader. Fish will be measured, sexed, and stomach contents will be examined and recorded by scientific personnel. The Cruise Leader will be responsible for the disposition of the catch, in accordance with NOAA Administrative Order 202-735B, dated January 9, 1989. While underway, trolling gear will be used when conditions permit. While stationary, hook-and-line gear may be used.

End of Operations (Transit at Night)

When daily scientific operations are completed, night transit is not often anticipated. If the ship needs to transit at night, the ship may resume course along the trackline, at a speed determined by the Cruise Leader, until it is necessary to stop for the pre-dawn CTD station, if applicable. The Cruise Leader will determine the nightly transit length on a daily basis.

Waypoints for Leg 1 will be provided to the ship no less than 10 days prior to sailing.

D. Dive Plan

All dives are to be conducted in accordance with the requirements and regulations of the NOAA Diving Program (<http://www.ndc.noaa.gov/dr.html>) and require the approval of the ship's Commanding Officer.

No dives are planned for this project.

E. Applicable Restrictions

Poor weather conditions may preclude normal operations; mitigation will include transiting to a more workable place within the study area.

III. Equipment

A. Equipment and capabilities provided by the ship (itemized)

1. Insulated cable running from location site for CPUs (acoustics laboratories) to the flying bridge consoles
2. Power, ship's GPS, and ship's SCS connections to CPUs running the flying bridge consoles (3 units) - Please note that it is very important that all science computers be connected to the same ship's GPS
3. Canopy on flying bridge
4. Three handheld radios (as spares)
5. Small boat, including safety equipment and spare parts, for biopsy sampling, photography, tagging, and seabird collection
6. Freezer space for biological samples (standard walk-in freezer -20 °C and -80 °C freezer)
7. CTD system including dual temperature, salinity, pressure, and oxygen sensors
8. Oceanographic winch with minimum 500 m of .375" conducting wire, terminated to CTD
9. Bottom depth checking during CTD casts
10. SeaBird thermosalinograph and connection to SCS
11. Debubbler to protect clean seawater pump to TSG.
12. Connection of secondary temperature sensor for TSG to SCS
13. Sippican XBT launcher and connection to Sippican software
14. Fume hood (located in chem lab, aft counter, left side)
15. Small refrigerator for cell culture (chem lab)
16. Storage space on inside the ship (main or aft laboratories) for 2 boxes of XBTs
17. Scientific Computing System for data collection
18. Simrad EK60 scientific echo sounder with 38, 70, 120, 200, and 333 kHz transducers plus PC with EK60 data logging software and input cables
19. Marine Operations and Ship's Official Deck Log (electronic)/Weather

- Observation sheets, filled out by Deck Officers
- 20. Installation of sonobuoy antenna and coax cable to the acoustic lab
- 21. Copy Machine
- 22. Scientific use computers in acoustic lab
- 23. Network access to printers for biopsy sampling computer
- 24. Four (4) ship's GPS connection to the acoustics lab for computers
- 25. Exterior storage space for six (6) pallets of sonobuoys
- 26. Deck space for 4 fish boxes for marine mammal equipment
- 27. Saltwater hookup on fantail
- 28. Bow platform for biopsy and photography operations
- 29. RHIB – 7 m (gas powered) with bow pulpit
- 30. Winches for CTD
- 31. Space on flying bridge for 4 fish boxes of mammal equipment
- 32. Grappling hook and line

B. Equipment and Capabilities provided by the scientists (itemized)

- 1. Four 7x50 hand-held binoculars
- 2. Three 25x150 binoculars and stands
- 3. Video camera and tapes
- 4. Three digital cameras, lenses, and accessories
- 5. Four handheld radios
- 6. Three laptop computers for photo-ID team, email, and backup unit
- 7. Two desktop computers, one mounted in the acoustics room and one mounted in Chief Scientist stateroom with CAT6 KVM extension units at CPUs and at remote console units on the flying bridge
- 8. Portable GPS component
- 9. Crossbows, biopsy darts and tips, sample vials and storage solution (EtOH) with SDS
- 10. Rigging to safely work from bow
- 11. Four liquid nitrogen tanks (three 70 l and one 34 l) for biopsy sample preservation with safety data sheet (SDS).
- 12. One notebook computer for biopsy data entry and two printers: a small deskjet and a thermal label printer
- 13. Two long-handled dip nets and sample containers
- 14. XBT probes (Deep Blues) - 2 cases to be stored in lab spaces (constant temperature room)
- 15. Oceanographic data logs and log books
- 16. Computer data storage media (diskettes, CDs, etc.)
- 17. Six (6) pallets of sonobuoys (5'x5'x5', 1400 lbs when full)
- 18. Sonobuoy receivers with rack-mounted recording system
- 19. Hydrophone arrays and directional hydrophones
- 20. Two external hard drives for EK60 data storage
- 21. 20 Wildlife Computers (Redmond, WA, USA) MK 10a transmitters custom-designed in an implantable cylinder housing
- 22. Personal safety equipment required for small boat personnel (up to 5 persons) for implantable tagging on small boat (knife, strobe, whistle and mirror)
- 23. Pneumatic gun (modified version of the Air Rocket Transmitter System [ARTS])
- 24. Seawater filtration manifold
- 25. Permits for specimen collection

IV. Hazardous Materials

A. Policy and Compliance

The Chief Scientist is responsible for complying with FEC 07 Hazardous Materials and Hazardous Waste Management Requirements for Visiting Scientific Parties (or the OMAO procedure that supersedes it). By Federal regulations and NOAA Marine and Aviation Operations policy, the ship may not sail without a complete inventory of all hazardous materials by name and quantity, MSDS, appropriate spill cleanup materials (neutralizing agents, buffers, or absorbents) in amounts adequate to address spills of a size equal to the amount of chemical brought aboard, and chemical safety and spill response procedures. Documentation regarding those requirements will be provided by the Chief of Operations, Marine Operations Center, upon request.

Per OMAO procedure, the scientific party will include with their project instructions and provide to the CO of the respective ship 30 days before departure:

- List of chemicals by name with anticipated quantity
- List of spill response materials, including neutralizing agents, buffers, and absorbents
- Chemical safety and spill response procedures, such as excerpts of the program's Chemical Hygiene Plan or SOPs relevant for shipboard laboratories
- For bulk quantities of chemicals in excess of 50 gallons total or in containers larger than 10 gallons each, notify ship's Operations Officer regarding quantity, packaging and chemical to verify safe stowage is available as soon as chemical quantities are known.

Upon embarkation and prior to loading hazardous materials aboard the vessel, the scientific party will provide to the CO or their designee:

- An inventory list showing actual amount of hazardous material brought aboard
- An SDS for each material
- Confirmation that neutralizing agents and spill equipment were brought aboard sufficient to contain and cleanup all of the hazardous material brought aboard by the program
- Confirmation that chemical safety and spill response procedures were brought aboard

Upon departure from the ship, scientific parties will provide the CO or their designee an inventory showing that all chemicals were removed from the vessel. The CO's designee will maintain a log to track scientific party hazardous materials. SDS will be made available to the ship's complement, in compliance with Hazard Communication Laws.

Scientific parties are expected to manage and respond to spills of scientific hazardous materials. Overboard discharge of hazardous materials is not permitted aboard NOAA ships.

B. Inventory

Common Name of Material	Qty	Notes	Trained Individual	Spill control
Ethanol	TBD		Aimée Lang	Flammable
Nitrogen	235 liters	Stored in dewar	Aimée Lang	Cryogenic
Bleach	1 ga		Aimée Lang	Corrosive

C. Chemical safety and spill response procedures

FLAMMABLE

- Shut off ignition sources and evacuate the lab.
- Absorb with an inert material and place in a closed container for disposal.
- Use nonsparking tools.
- Ventilate area and wash spill site after material pickup is complete.

CORROSIVE

- Ventilate area of leak or spill. Remove all sources of ignition.
- Wear appropriate personal protective equipment.
- Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible.
- Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container.
- Do not use combustible materials, such as sawdust.

CRYOGENIC

- Evacuate all personnel from the area.
- Shut the door and, if possible, turn off power to the room.
- Liquid will evaporate at room temperature.

Inventory of Spill Kit supplies

Product Name	Amount	Chemicals it is useful against	Amount it can clean up
Absorbent Material	2 boxes	Bleach	2 ga

D. Radioactive Materials

No Radioactive Isotopes are planned for this project.

V. Additional Projects

A. Supplementary (“Piggyback”) Projects

No Supplementary Projects are planned.

B. NOAA Fleet Ancillary Projects

No NOAA Fleet Ancillary Projects are planned.

VI. Disposition of Data and Reports

Disposition of data gathered aboard NOAA ships will conform to NAO 216-101 *Ocean Data Acquisitions* and NAO 212-15 *Management of Environmental Data and Information*. To guide the implementation of these NAOs, NOAA’s Environmental Data Management Committee (EDMC) provides the *NOAA Data Documentation Procedural Directive* (data documentation) and *NOAA Data Management Planning Procedural Directive* (preparation of Data Management Plans). OMAO is developing procedures and allocating resources to manage OMAO data and Programs are encouraged to do the same for their Project data.

A. Data Classifications: *Under Development*

- a. OMAO Data
- b. Program Data

B. Responsibilities: *Under Development*

VII. Meetings, Vessel Familiarization, and Project Evaluations

A. Pre-Project Meeting: The Chief Scientist and Commanding Officer will conduct a meeting on 30 June 2015 with pertinent members of the scientific party and ship’s crew to discuss required equipment, planned operations, concerns, and establish mitigation strategies for all concerns. This meeting shall be conducted before the beginning of the project with sufficient time to allow for preparation of the ship and project personnel. The ship’s Operations Officer usually is delegated to assist the Chief Scientist in arranging this meeting.

B. Vessel Familiarization Meeting: The Commanding Officer is responsible for ensuring scientific personnel are familiarized with applicable sections of the standing orders and vessel protocols, e.g., meals, watches, etiquette, drills, etc. A vessel familiarization meeting shall be conducted in the first 24 hours of the project’s start and is normally presented by the ship’s Operations Officer.

C. Post-Project Meeting: The Commanding Officer is responsible for conducted a meeting no earlier than 24 hrs before or 7 days after the completion of a project to discuss the overall success and shortcomings of the project. Concerns regarding safety, efficiency, and suggestions for future improvements shall be discussed and mitigations for future projects will be documented for future use. This meeting shall be attended by the ship's officers, applicable crew, the Chief Scientist, and members of the scientific party and is normally arranged by the Operations Officer and Chief Scientist.

D. Project Evaluation Report

Within seven days of the completion of the project, a Customer Satisfaction Survey is to be completed by the Chief Scientist. The form is available at <http://www.oma.noaa.gov/fleeteval.html> and provides a "Submit" button at the end of the form. Submitted form data is deposited into a spreadsheet used by OMAO management to analyze the information. Though the complete form is not shared with the ships', specific concerns and praises are followed up on while not divulging the identity of the evaluator.

VIII. Miscellaneous

A. Meals and Berthing

The ship will provide meals for the scientists listed above. Meals will be served 3 times daily beginning one hour before scheduled departure, extending throughout the project, and ending two hours after the termination of the project. Since the watch schedule is split between day and night, the night watch may often miss daytime meals and will require adequate food and beverages (for example a variety of sandwich items, cheeses, fruit, milk, juices) during what are not typically meal hours. Special dietary requirements for scientific participants will be made available to the ship's command at least seven days prior to the project. Box lunches may be requested the day before by Cruise Leader for the Small Boat Crew (4).

Berthing requirements, including number and gender of the scientific party, will be provided to the ship by the Chief Scientist. The Cruise Leader and Executive Officer will work together on a detailed berthing plan to accommodate the gender mix of the scientific party taking into consideration the current make-up of the ship's complement. The Chief Scientist is responsible for ensuring the scientific berthing spaces are left in the condition in which they were received; for stripping bedding and linen return; and for the return of any room keys which were issued. The Chief Scientist is also responsible for the cleanliness of the laboratory spaces and the storage areas utilized by the scientific party, both during the project and at its conclusion prior to departing the ship.

All NOAA scientists will have proper travel orders when assigned to any NOAA ship. The Chief Scientist will ensure that all non-NOAA or non-Federal scientists aboard also have proper orders. It is the responsibility of the Chief Scientist to ensure that the entire

scientific party has a mechanism in place to provide lodging and food and to be reimbursed for these costs in the event that the ship becomes uninhabitable and/or the galley is closed during any part of the scheduled project.

All persons boarding NOAA vessels give implied consent to comply with all safety and security policies and regulations which are administered by the Commanding Officer. All spaces and equipment on the vessel are subject to inspection or search at any time. All personnel must comply with OMAO's Drug and Alcohol Policy dated May 17, 2000 which forbids the possession and/or use of illegal drugs and alcohol aboard NOAA Vessels.

B. Medical Forms and Emergency Contacts

The NOAA Health Services Questionnaire (NHSQ, NF 57-10-01 (3-14)) must be completed in advance by each participating scientist. The NHSQ can be obtained from the Chief Scientist or the NOAA website <http://www.corporateservices.noaa.gov/noaaforms/eforms/nf57-10-01.pdf>.

All NHSQs submitted after March 1, 2014 must be accompanied by NOAA Form (NF) 57-10-02 - Tuberculosis Screening Document in compliance with OMAO Policy 1008 (Tuberculosis Protection Program).

The completed forms should be sent to the Regional Director of Health Services at the applicable Marine Operations Center. The NHSQ and Tuberculosis Screening Document should reach the Health Services Office no later than 4 weeks prior to the start of the project to allow time for the participant to obtain and submit additional information should health services require it, before clearance to sail can be granted. Please contact MOC Health Services with any questions regarding eligibility or completion of either form. Ensure to fully complete each form and indicate the ship or ships the participant will be sailing on. The participant will receive an email notice when medically cleared to sail if a legible email address is provided on the NHSQ.

The participant can mail, fax, or email the forms to the contact information below. Participants should take precautions to protect their Personally Identifiable Information (PII) and medical information and ensure all correspondence adheres to DOC guidance (http://ocio.os.doc.gov/ITPolicyandPrograms/IT_Privacy/PROD01_008240).

The only secure email process approved by NOAA is Accellion Secure File Transfer which requires the sender to setup an account. Accellion's Web Users Guide is a valuable aid in using this service, however to reduce cost the DOC contract doesn't provide for automatically issuing full functioning accounts. To receive access to a "Send Tab", after your Accellion account has been established send an email from the associated email account to accellionAlerts@doc.gov requesting access to the "Send Tab" function. They will notify you via email usually within 1 business day of your approval. The "Send Tab" function will be accessible for 30 days.

Contact information:

Regional Director of Health Services
Marine Operations Center – Pacific

2002 SE Marine Science Dr.
Newport, OR 97365
Telephone 541-867-8822
Fax 541-867-8856
Email MOP.Health-Services@noaa.gov

Prior to departure, the Chief Scientist must provide an electronic listing of emergency contacts to the Executive Officer for all members of the scientific party, with the following information: contact name, address, relationship to member, and telephone number.

C. Shipboard Safety

Hard hats are required when working with suspended loads. Work vests are required when working near open railings and during small boat launch and recovery operations. Hard hats and work vests will be provided by the ship when required.

Wearing open-toed footwear or shoes that do not completely enclose the foot (such as sandals or clogs) outside of private berthing areas is not permitted. At the discretion of the ship CO, safety shoes (i.e. steel or composite toe protection) may be required to participate in any work dealing with suspended loads, including CTD deployment and recovery. The ship does not provide safety-toed shoes/boots. The ship's Operations Officer should be consulted by the Chief Scientist to ensure members of the scientific party report aboard with the proper attire.

D. Communications

A progress report on operations prepared by the Chief Scientist may be relayed to the program office. Sometimes it is necessary for the Chief Scientist to communicate with another vessel, aircraft, or shore facility. Through various means of communications, the ship can usually accommodate the Chief Scientist. Special radio voice communications requirements should be listed in the project instructions. The ship's primary means of communication with the Marine Operations Center is via email and the Very Small Aperture Terminal (VSAT) link. Standard VSAT bandwidth at 128kbs is shared by all vessel's staff and the science team at no charge. Increased bandwidth in 30-day increments is available on the VSAT systems at increased cost to the scientific party. If increased bandwidth is being considered, program accounting is required and it must be arranged at least 30 days in advance.

E. IT Security

Any computer that will be hooked into the ship's network must comply with the *OMAO Fleet IT Security Policy* 1.1 (November 4, 2005) prior to establishing a direct connection to the NOAA WAN. Requirements include, but are not limited to:

(1) Installation of the latest virus definition (.DAT) file on all systems and performance of a virus scan on each system.

- (2) Installation of the latest critical operating system security patches.
- (3) No external public Internet Service Provider (ISP) connections.

Completion of the above requirements prior to boarding the ship is required.

Non-NOAA personnel using the ship's computers or connecting their own computers to the ship's network must complete NOAA's IT Security Awareness Course within 3 days of embarking.

F. Foreign National Guests Access to OMAO Facilities and Platforms

All foreign national access to the vessel shall be in accordance with NAO 207-12 and RADM De Bow's March 16, 2006 memo (<http://deemedexports.noaa.gov>). National Marine Fisheries Service personnel will use the Foreign National Registration System (FNRS) to submit requests for access to NOAA facilities and ships. The Departmental Sponsor/NOAA (DSN) is responsible for obtaining clearances and export licenses and for providing escorts required by the NAO. DSNs should consult with their designated Line Office Deemed Export point of contact to assist with the process.

Full compliance with NAO 207-12 is required.

Responsibilities of the Chief Scientist:

1. Provide the Commanding Officer with the email generated by the Servicing Security Office granting approval for the foreign national guest's visit. (For NMFS-sponsored guests, this email will be transmitted by FNRS.) This email will identify the guest's DSN and will serve as evidence that the requirements of NAO 207-12 have been complied with.
2. Escorts – The Chief Scientist is responsible to provide escorts to comply with NAO 207-12 Section 5.10, or as required by the vessel's DOC/OSY Regional Security Officer.
3. Ensure all non-foreign national members of the scientific party receive the briefing on Espionage Indicators (NAO 207-12 Appendix A) at least annually or as required by the Servicing Security Office.
4. Export Control - Ensure that approved controls are in place for any technologies that are subject to Export Administration Regulations (EAR).

The Commanding Officer and the Chief Scientist will work together to implement any access controls necessary to ensure no unlicensed export occurs of any controlled technology onboard regardless of ownership.

Responsibilities of the Commanding Officer:

1. Ensure only those foreign nationals with DOC/OSY clearance are granted access.
2. Deny access to OMAO platforms and facilities by foreign nationals from countries controlled for anti-terrorism (AT) reasons and individuals from Cuba or Iran without

written approval from the Director of the Office of Marine and Aviation Operations and compliance with export and sanction regulations.

3. Ensure foreign national access is permitted only if unlicensed deemed export is not likely to occur.
4. Ensure receipt from the Chief Scientist or the DSN of the FNRS or Servicing Security Office email granting approval for the foreign national guest's visit.
5. Ensure Foreign Port Officials, e.g., Pilots, immigration officials, receive escorted access in accordance with maritime custom to facilitate the vessel's visit to foreign ports.
6. Export Control - 8 weeks in advance of the project, provide the Chief Scientist with a current inventory of OMAO controlled technology onboard the vessel and a copy of the vessel Technology Access Control Plan (TACP). Also notify the Chief Scientist of any OMAO-sponsored foreign nationals that will be onboard while program equipment is aboard so that the Chief Scientist can take steps to prevent unlicensed export of Program controlled technology. The Commanding Officer and the Chief Scientist will work together to implement any access controls necessary to ensure no unlicensed export occurs of any controlled technology onboard regardless of ownership.
7. Ensure all OMAO personnel onboard receive the briefing on Espionage Indicators (NAO 207-12 Appendix A) at least annually or as required by the Servicing Security Office.

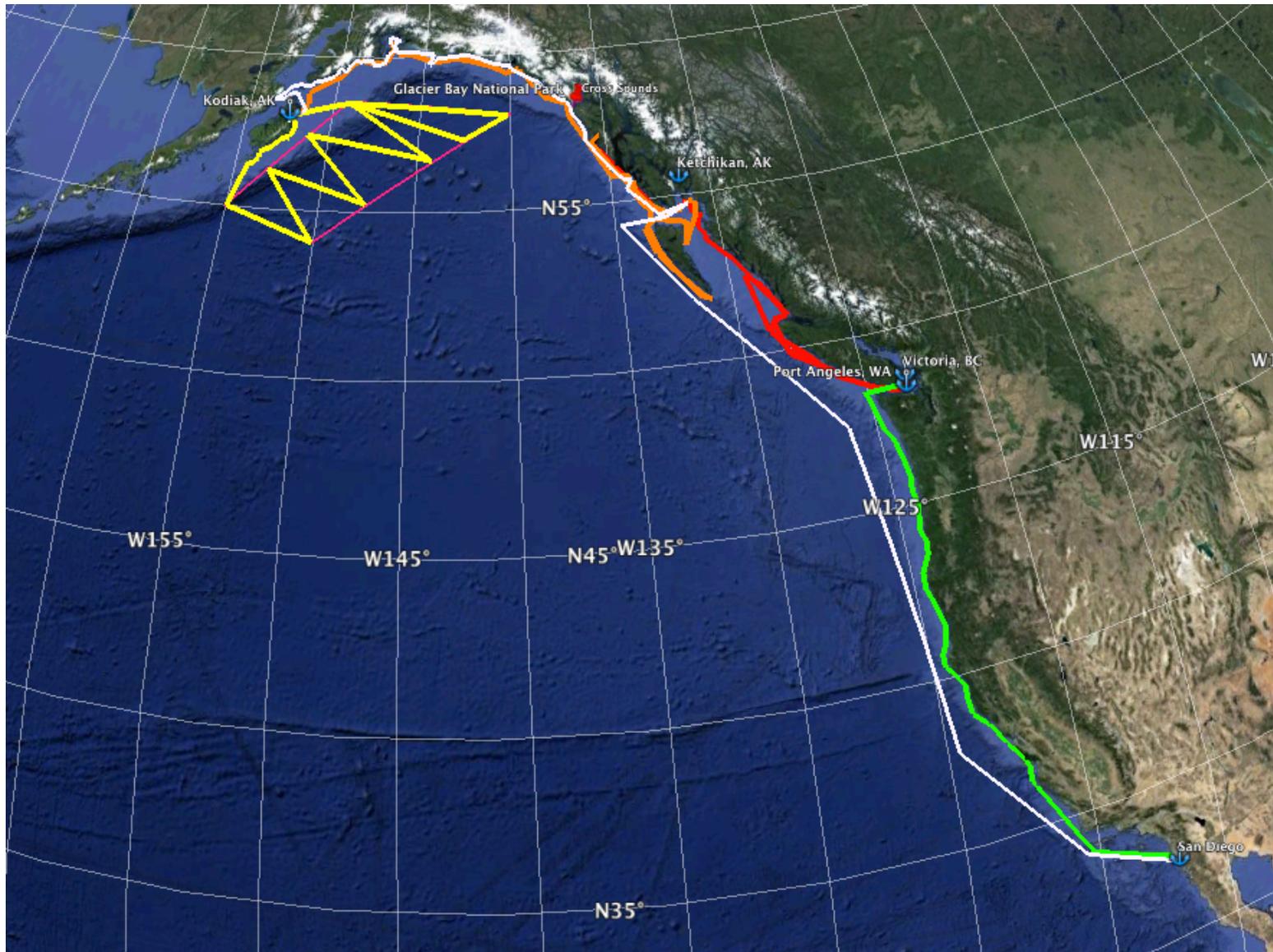
Responsibilities of the Foreign National Sponsor:

1. Export Control - The foreign national's sponsor is responsible for obtaining any required export licenses and complying with any conditions of those licenses prior to the foreign national being provided access to the controlled technology onboard regardless of the technology's ownership.
2. The DSN of the foreign national shall assign an on-board Program individual, who will be responsible for the foreign national while on board. The identified individual must be a U.S. citizen and a NOAA or DOC employee. According to DOC/OSY, this requirement cannot be altered.
3. Ensure completion and submission of Appendix C (Certification of Conditions and Responsibilities for a Foreign National

VIII. Appendices

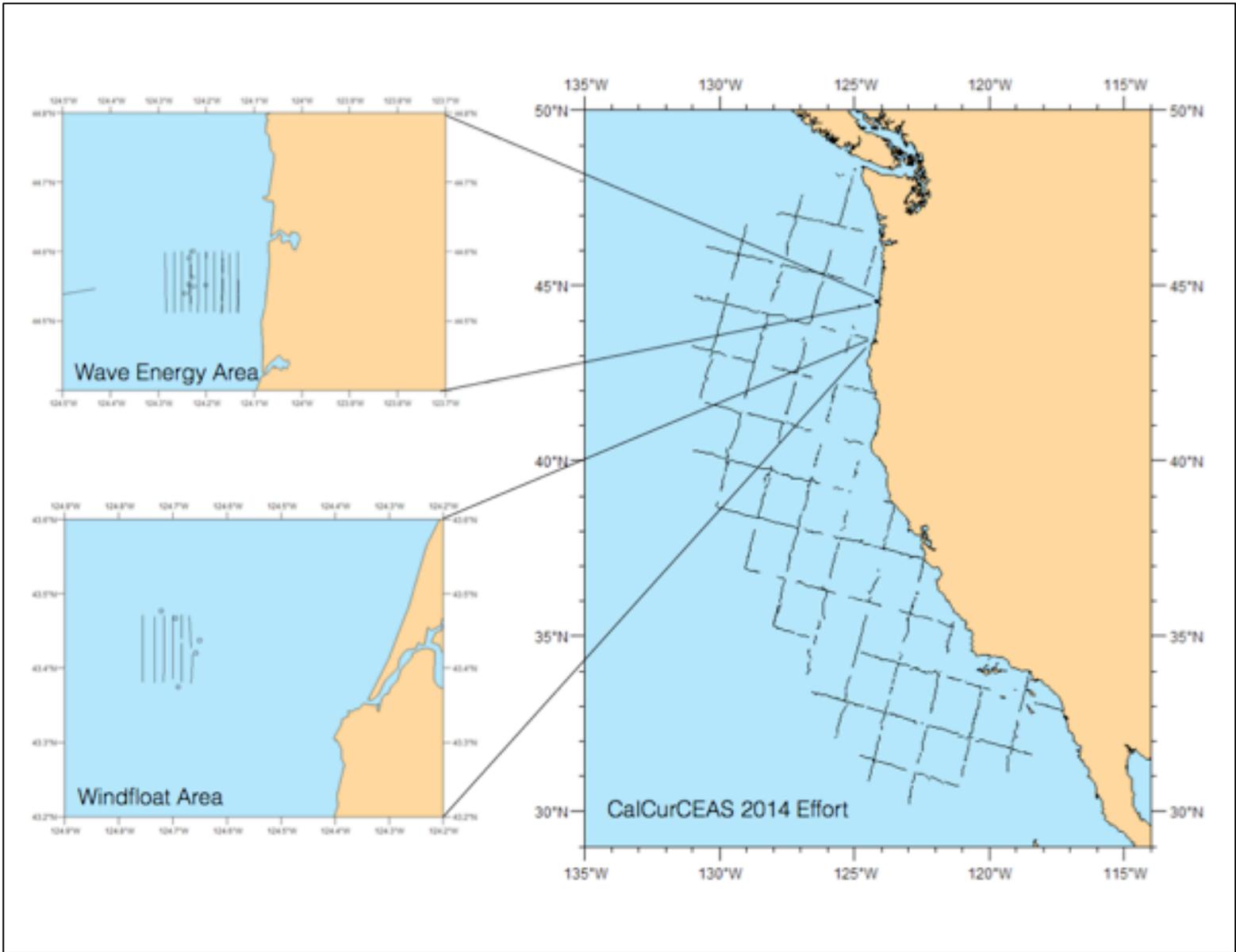
1. Survey area
2. BOEM Study Area

Appendix 1
Southern Feeding Ground Survey of Eastern North Pacific Gray Whales Study Area



Planned route for Southern Feeding Ground Survey for Eastern North Pacific Gray Whale. Legend: Leg 1: white; Leg 2: yellow; Leg 3: orange; Leg 4: red; Leg 5: green.

Appendix 2
BOEM Study Area



BOEM Study Area to be completed at end of Leg 4 or beginning of Leg 5.